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10/667,951	09/22/2003	Kyle R. Johns	MS1-1705US	1221
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LEE & HAYES PLLC 421 W RIVERSIDE AVENUE SUITE 500 SPOKANE, WA 99201			EXAMINER CHAUHAN, LOREN B	
			ART UNIT 2193	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/667,951	<b>Applicant(s)</b> JOHNS ET AL.	
	<b>Examiner</b> Loren Chauhan	<b>Art Unit</b> 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on September 22, 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>08/20/2004, 10/06/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-20 are presented for examination.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The following terms lack antecedent basis:
  - i. The frame – claim 9, line 6.
- b. The claim language in the following claims are not clearly understood:
  - ii. As per claim 1, lines 8-10, it is not clearly understood what is meant by “receiving a user selection of one of the events in the listing and selecting which chronological point should be shown in the frame portion based at least in part on the user-selected event” (i.e. which selection is dominating on the frame portion display i.e. is the selection of the events or selection of the chronological points are being shown in the frame portion?).
  - iii. As per claim 9, lines 4-7, it is not clearly understood what is meant by “display a first window that identifies events that have been captured

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during the drawing of a video frame by a graphics processing unit; and display a second window that shows how the frame appears at different points while being drawn" (i.e. who is capturing events and displaying these windows, is it graphic processing unit or other processor? What is the relationship between these two windows? Are these two windows are parts of the one window or are they shown inside one window? Is second window shows just video frame or it also shows time line or event line? What is included in the second window video frame, event line, time line or first window?). Line 6, it is uncertain whether "the frame" refer to "video frame" in line 5 (i.e. if they are the same, the same term should be used throughout the claim).

iv. As per claim 18, it is a method claim of claim 9 therefore; it is rejected for the same reason as claim 9 above.

The art rejections of these claims will be based on the examiner's best understanding of the claims.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Advani (US Pat. No. 5,862,381).

6. As per claim 1, Advani teaches the invention as claimed including a method for controlling presentation of information to facilitate performance analysis for processing (col. 1, lines 5-9, 54-55), the method comprising:

displaying a listing of events that have been captured during processing of a set of commands as well as information regarding the processing of the events (col. 1, lines 18, 24-42, col. 3, lines 29-31, col. 10, lines 43-45);

displaying a frame portion that includes information regarding the processing of the set of commands at different chronological points during the processing (col. 1, lines 43-49, col. 2, lines 13-14, col. 3, lines 38-42, col. 5, lines 14-16); and

receiving a user selection of one of the events in the listing and selecting which chronological point should be shown in the frame portion based at least in part on the user-selected event (fig. 6B, 6C, col. 9, lines 53-63, col. 10, lines 6-8, col. 7, lines 60-62).

7. As per claim 2, Advani teaches the information regarding the processing of the events comprises a value representing how long it took for processing of the events by a processing unit to finish (col. 10, lines 14-17).

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8. As per claim 3, Advani teaches a timeline portion having a plurality of bars (col. 7, lines 60-62), each bar corresponding to a particular one of the events, wherein a location of each bar on the timeline indicates when the corresponding event occurred relative to the other events during processing (fig. 4A-4F, col. 7, lines 16-17).

9. As per claim 4, Advani teaches a method, further comprising:

allowing the user to select a warning window, to be displayed as the frame portion, wherein the warning window identifies violations of one or more recommendations for programming a processing unit that processed the set of commands (col. 2, lines 61-62).

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 5-7, 9-15 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Advani (US Pat. No. 5,862,381).

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12. As per claim 5, Advani fail to teach that the set of command comprising drawing a frame of video.

13. However, Advani's system executing/monitoring computer program that performs various functions (col. 1, lines 18-21). It would have been obvious to one of ordinary skill in the art at the time of the invention to have included "drawing a frame of video" function in Advani's system because doing so would increase the field of use in Advani's including "video frame" (col. 11, lines 4-6).

14. As per claim 6, Advani teaches the user to select one of multiple views to be displayed in the frame portion (col. 7, lines 58-60), but fails to teach the multiple views include a render target view that shows the frame as it is drawn at different chronological points while being drawn, a depth buffer view that shows a depth value for each pixel in the frame at different chronological points while the frame is being drawn, and a wireframe view that shows an outline of each triangle rendered in the frame at different chronological points while the frame is being drawn.

15. However, Advani's system has ability to view different characteristics of a trace file and different field information for each event (col. 7, lines 58-59, 65-66). It would have been obvious to one of ordinary skill in the art at the time of the invention to include "depth buffer view" and "wireframe view" in Advani's system because by doing so system is able to display different information of processor events during program execution.

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16. As per claim 7, Advani teaches allowing the user to select one of multiple views to be displayed in the frame portion (col. 7, lines 57-58, col. 9, lines 10-11), but fails to show the multiple views include an overdraw view and a fill rate view.

17. However, Advani's system executing/monitoring program has ability to display simultaneously various characteristics of a trace (col. 7, lines 59-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to have overdraw view and fill rate view in Advani's system because by doing so user has ability to quickly access, easily review and understand trace file data (col. 11, lines 42-43).

18. As per claim 9, Advani teaches one or more computer readable media having one or more instructions that, when executed by one or more processors, causes the one or more processors to:

display a first window that identifies events that have been captured during the drawing of a video frame by a graphics processing unit (col. 7, lines 58-67); but fails to teach the second window that shows how the frame appears at different points while being drawn.

19. However, Advani's system has ability to produce multiple windows and since data is available (collected and stored), it is just a matter to sort/called to produce desire display (col. 7, lines 65-67). It would have been obvious to one of ordinary skill in the art at the time of invention to have a second window display because doing so would give different information about the events (col. 7, lines 65-66).



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20. As per claim 10, Advani teaches the first window further identifies, for each of the identified events, a value representing how long it took for drawing of the event by a graphics processing unit to occur (col. 10, lines 14-17).

21. As per claim 11, Advani teaches the one or more instructions further causes the one or more processors to:

display a third window including a timeline having a plurality of bars (col. 7, lines 60-62), each bar corresponding to a particular one of the identified events, wherein a location of each bar on the timeline indicates when the corresponding event occurred relative to the other events during drawing of the frame (fig. 4A-4F, col. 7, lines 16-17).

22. As per claims 12 and 13, they are similar to claims 6 and 7, therefore claims 12 and 13 are rejected for the same reason as per claims 6 and 7 respectively.

23. As per claim 14, Advani teaches the user to select a warning window, to be displayed as the second window, wherein the warning window identifies violations of one or more recommendations for programming a graphics processing unit that drew the frame (col. 2, lines 61-62).

24. As per claim 15, Advani teaches the instruction causes the processor to display a pixel history window that identifies each of the events that affects a user-selected pixel of the frame (fig. 6B, 6C, col. 9, lines 52-63, col. 7, lines 60-62, col. 10, lines 6-8).

25. As per claim 17, Advani does not explicitly teach displaying a mesh debugger window that includes information about a single mesh of the frame, and a table that shows the attribute values for each vertex in the mesh as well as an output of a vertex shader program for each vertex in the mesh.

26. However, Advani discloses a window that displays various characteristics of a trace file data (col. 7, lines 59-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to include vertex attribute value and output of the shader program in Advani's trace file because by doing so would increase the use of a trace file in debugging of a program (col. 1, line 30).

27. As per claim 18, Advani teaches the invention substantially including a system comprising:

a memory (fig. 1, 140; col. 4, lines 50-51);

a processor coupled to the memory (fig. 1, 145; col. 4, lines 51-53); and

a plurality of instructions stored in the memory and executed by the processor (col. 4, lines 51-53) to present a user interface to enable a user to view information (col. 3, lines 10-11, 38-39), the user interface comprising:

For the rest of the claim limitation see the same claim rejection as per claim 9 above.

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28. As per claim 19, Advani teaches the graphics processing unit is part of another device coupled to the system (Fig. 1).

29. As per claim 20, Advani teaches the user interface further comprises:

a timeline window including a timeline having a plurality of bars (col. 7, lines 60-62), each bar corresponding to a particular one of the identified events, wherein a location of each bar on the timeline indicates when the corresponding event occurred relative to the other events during drawing of the frame (figs. 4A-4F, col. 7, lines 16-17).

30. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Advani (US Pat. No. 5,862,381) in view of Zatz (US Pat. No. 6,864,893).

31. As per claim 8, Advani fails to teach a debugger portion that identifies a pixel shader program or vertex shader program that was executed by a graphics processing unit in drawing the frame, and further identifies input and output register values for each instruction in the shader program as it executed in drawing the selected pixel.

32. Zatz teaches pixel program that calculates pixel depth values and writes in the memory (col. 3, lines 7-8, col. 4, lines 30-33). It is obvious to one of ordinary skill in the art at the time of the invention to include a debugger view in Advani's system because by doing so user has ability to quickly identify errors and anomalies that occurred during program execution can be corrected (Advani col. 1, lines 61-62).

33. As per claim 16, is similar to claim 8, therefore, it is rejected for same reason as per claim 8 above.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Loren Chauhan whose telephone number is 571-270-1554. The examiner can normally be reached on Mon.-Thr. 7:30-5:00 (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai T. An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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